February 20, 2024

California Air Resources Board
1001 I Street
Sacramento, CA 95815

RE: Proposed Low Carbon Fuel Standard Amendments

Dear California Air Resources Board Members and Staff,

Thank you for the opportunity to provide our comments and recommendations on the proposed Low Carbon Fuel Standard (LCFS) Amendments. We greatly appreciate the California Air Resources Board's (CARB) leadership in supporting and accelerating the transition to zero emission freight. California has led the way on cleaning up the transportation sector by designing and implementing a comprehensive suite of policies to address this multi-faceted challenge, including both sticks and carrots to increase vehicle supply, boost demand, and facilitate infrastructure deployment and grid integration. LCFS is a critical piece of this overall puzzle in terms of incentivizing infrastructure buildout and improving the total cost of ownership for electric vehicles, particularly for the medium- and heavy-duty vehicle sector.

The undersigned Joint MHD EV Infrastructure Parties develop single and multi-fleet EV charging hubs that provide third-party owned charging-as-a-service to medium and heavy duty (MHD) EV fleet owners. Multi-fleet EV charging hubs are especially important for enabling small (and many large) businesses without adequate onsite charging capability to electrify their fleet vehicles to reduce costs, improve employee and community health and achieve California policy goals for clean vehicle deployment and decarbonization. Multi-fleet EV charging hubs provide the added benefit of increasing charging infrastructure utilization, enabling more vehicles to charge per charger without triggering costly system upgrades, thereby reducing the overall cost for all utility ratepayers. Our collective business models foster the concentration of electrical loads in strategically chosen locations, facilitating a more seamless transition to MHD EVs for commercial fleets.

With critical adjustments, LCFS has the potential to be the single most important tool in helping the state meet its zero emission transportation goals and recent regulations – the Advanced Clean Trucks (ACT) and Advanced Clean Fleets (ACF) regulations in particular. We appreciate CARB staff's collaboration to date on the provisions most relevant to our businesses, particularly with regard to the MHD Fast Charging Infrastructure (MHD-FCI) provision. We strongly support the creation of the MHD-FCI program, though additional modifications are needed to maximize the clean air and climate benefits it can unlock. We also applaud staff for recognizing the need for program stringency updates to support credit prices as a robust market is needed for LCFS to truly catalyze private investment.
To fully realize the potential benefits of LCFS for truck electrification, we respectfully make the following recommendations.

1. **Maximize the benefits of the proposed medium- and heavy-duty fast charging infrastructure (MHD-FCI) program by increasing flexibility to better support the deployment of necessary charging infrastructure** in advance of truck deployment at the speed and scale to meet California's policy goals and regulations (e.g. CARB's recent Advanced Clean Fleets)
    A. **Eliminate geographic limitations** on MHD-FCI eligibility to improve program effectiveness, better align with fleet needs, mitigate delays, and reduce overall costs.
    B. **Eliminate the 10 FSE per-site cap** to enable the scale necessary to meet state goals and to encourage cost reductions that come with upfront investments and larger projects.

C. **Eliminate or reduce the 250kW minimum capacity** to enable infrastructure providers to provide the variety of solutions the market needs.
D. **Clarify rules around access requirements** for shared depots to avoid creating confusion around eligibility requirements.
E. **Increase overall MHD-FCI program size** to enable infrastructure deployment at the scale and pace required to meet California state goals.

2. **Strengthen and update the overall LCFS program to better align with long-term state goals and ambitions** by implementing changes that support credit prices.

We understand the board vote has been postponed to allow more time for consideration of potential program modifications, including some of what we outline above. We acknowledge the need for additional discussion, but also urge the board to move quickly with a decision in Q2 of this year. Market participants, including infrastructure providers, need certainty around program details and a lengthy delay will chill investment. Additional details and rationale for our highest priority recommendations can be found below.

1. Maximize the benefits of the proposed medium- and heavy-duty fast charging infrastructure (MHD-FCI) program by increasing flexibility to better support the deployment of necessary charging infrastructure.

At this early stage of the market, with under 1,000 medium- and heavy-duty electric trucks and vans on California roads based on recent data[1], the uncertainty around truck charger utilization in the near term creates a risk that many would-be infrastructure investors are unwilling to take. The result is a lack of sufficient investment in large scale charging for electric trucks, and this in turn is slowing the deployment of the electric trucks. The Fast-Charging Infrastructure (FCI) program has already proven to be an elegant and effective way to overcome this fundamental challenge, and we deeply appreciate CARB's proposal to add an FCI for the MHD sector (MHD-FCI) and the efforts to date to include multi-fleet charging hubs in program design.

With critical adjustments, MHD-FCI could be the single most powerful tool for attracting private capital to this sector, accelerating the rollout of charging infrastructure ahead of vehicle deployment. MHD-FCI has the potential to provide some certainty around revenue, thereby de-risking these projects and attracting private investment. The key is to design a program that is sufficiently robust and flexible to match California's clean air and climate ambitions. This is a unique opportunity to catalyze deployment of truck charging infrastructure just when it is needed most to support the state's clean truck regulations and programs. The draft proposal has laid the foundation for a strong program. With a few key modifications, MHD-FCI can deliver widespread health, air quality, and climate benefits while attracting private investment to a sector that will need it to scale up to meet the State's goals.

A. Eliminate geographic limitations on MHD-FCI eligibility to improve program effectiveness, better align with fleet needs, mitigate delays, and reduce overall costs, for both Private and Shared MHD-FCI charging site types.

Section § 95486.3 outlines MHD-FCI eligibility requirements, including the following: *"Located within one mile of a reading or pending electric vehicle Federal Highway Administration Alternative Fuel Corridor or on or adjacent*

[1] California Energy Commission Medium- and Heavy-Duty Zero-Emission Vehicles in California. As of the end of 2022, the total medium- and heavy-duty ZEV population in California included 272 trucks and 340 vans.

to a property used for medium or heavy-duty vehicle overnight parking, or has received capital funding from a State or Federal competitive grant program that includes location evaluation as criteria." We recommend removing these geographic restrictions entirely as they will undercut program effectiveness, delay deployment, and increase costs for charging and grid upgrades for MHD-FCI Shared charging sites, and are also irrelevant to the MHD-FCI Private charging sites category; public navigability and accessibility are not merits of an MHD-FCI Private charging site that is by definition precisely on route for the associated Private fleet.

Corridor charging does not address operational needs for many high-priority market segments. While corridor-based charging may be part of the solution for long-haul trucking, it does not align well with the duty cycles and day-to-day operations of short haul and return-to-base fleets such as drayage, middle mile, and last mile delivery. These are the vehicles that are expected to electrify first due to ACF regulations and the overall "fit" of battery electric vehicle technology today. These vehicles would benefit from charging in areas where they operate and where they are domiciled, and these locations do not necessarily fall within one mile of a corridor. Additional flexibility is needed to meet needs for the broader MHD sector, beyond just long-haul applications, and to serve the market segments most ripe for rapid decarbonization.

Focusing the program on corridors also inadequately considers grid constraints and the implications that this may have on fleet electrification. Depots will generally have large power demands (often 5-15MW). Land with access to sufficient grid capacity on distribution feeders is very limited, and the number of suitable sites shrinks even further when factoring in zoning, permitting, and ingress/egress requirements. The proposed one-mile restriction would not only further limit where MHD charging can occur but also funnel depots to areas that would necessitate costly and lengthy grid upgrades – with the unfortunate consequence of slowing down charging infrastructure deployment and potentially increasing electric rates for all Californians. Additional flexibility is needed to account for the constraints on our grid and to facilitate timely, cost-effective infrastructure buildout.

The proposed program does include language allowing eligibility for sites adjacent to overnight parking and sites that have received certain state or federal funds. While we appreciate these provisions and they are directionally helpful, this language is still far too limiting. The language around existing parking does not account for grid constraints or for the fact that fleet operations are evolving and parking locations will not be static, particularly given the challenges associated with infrastructure deployment (e.g., grid constraints, landlord restrictions, etc.). Indeed, greenfield sites with overnight parking should not be excluded just because they are not currently providing truck parking. With regard to allowing MHD-FCI for sites that have won competitive grant solicitations, we appreciate the intention but note that (a) funding is limited and budgets are under pressure, so this is a relatively small number of sites, and (b) local funding appears to be excluded despite the fact that many local air districts have programs aimed at MHD-fleet electrification.

We recommend completely eliminating geographic restrictions in order to maximize the benefits of the program. Business models, amount of investment needed to build charging sites, and investor pressures will minimize the risk of stranded assets and ensure that charger deployments align with fleet operational needs for both Shared and Private charging sites in a network. If CARB ultimately decides that limits are needed, we

recommend specific changes to provide added flexibility, open up additional sites, and avoid unintentional delays and potential cost increases.

- **Recommendation: Strike section §95486.3 (b)(1)(B)2** to provide implementation flexibility. This is the best course of action to accelerate progress on electrification and to avoid unintended consequences.
- **Suboptimal alternative:** We maintain that a program without geographic limits would best serve CARB goals and that limits are unnecessary given the natural market forces that will push for optimized locations. If, however, CARB determines that some geographic limits are necessary for shared charging sites, we suggest increasing flexibility with the following changes to existing language to address corridor distance, the realities of parking and fleet operations, and the importance of local decision-making in this sector:
  2. *located within ~~one mile~~ five miles of a ready~~ing~~ or pending electric vehicle Federal Highway Administration Alternative Fuel Corridor or on or adjacent to a property that allows ~~used for~~ medium or heavy-duty vehicle overnight parking at the time credits are claimed, or has received capital funding from a local, State or Federal competitive grant program. ~~that includes location evaluation as criteria~~*

B. Eliminate the 10 FSE per-site cap to enable the scale necessary to meet state goals and to encourage cost reductions that come with upfront investments and scale.

Section §95486.3 states *"The total number for all FSEs claiming MHDFCI credit owned by a single applicant within ¼ mile of an MHD-FCI site cannot exceed ten."* Limiting eligibility to 10 FSEs per site would severely restrict program effectiveness, and would hamstring the ability for charging infrastructure to be deployed at the speed and scale required by the Advanced Clean Fleets and Advanced Clean Trucks regulations.

Our companies are developing depots of various sizes, including within the 100-truck range, as depots of this size have the scale to bring down costs for customers. The purpose of the FCI program is to encourage the deployment of charging infrastructure in advance of truck availability by providing bridge revenue as truck deployments ramp up. Limiting participation to a small proportion of a site's chargers – in many instances a 90% reduction -- would make the program ineffective for these depots. With this restriction, the program would perversely only support the sites with higher per-port costs – which is not in California's best interests.

According to CEC analysis, we estimate that California must install an average of approximately 66 MHD chargers a day through 2035[2]. This is an astronomical rate of growth, and the FCI is an elegant tool to help achieve that. Limiting the eligible number of chargers in a depot would be catastrophic to our efforts to meet the scale and scope of infrastructure deployment required by CARB regulation.

[2] This calculation is based on the CEC AB 2127 report:
Assembly Bill 2127 Second Electric Vehicle Charging Infrastructure Assessment: Assessing Charging Needs to Support Zero-Emission Vehicles in 2030 and 2035 | California Energy Commission. To support medium- and heavy-duty plug-in electric vehicles, California will need about 109,000 depot chargers and 5,500 public chargers for 155,000 vehicles in 2030, and 256,000 depot chargers and 8,500 public chargers for 377,000 vehicles in 2035.

Given other provisions in the draft language, we believe it has been suggested that the intention behind the 10 FSE per site limit may be to force 1 MW chargers. If so, there are multiple reasons to reconsider. First, not all customers and use cases require megawatt charging, and there are cost tradeoffs with higher power charging. Secondly, there are also grid benefits to lower power charging -- maximizing the utilization of the existing distribution network thereby minimizes potential rate impacts. Thirdly, 1 MW chargers do not yet exist at broad commercial scale. Finally, there are no trucks currently commercially available that can take 1 MW; though some MW+ models are being developed, they are not expected to be commercially available at scale for some time.

Finally, as noted above, the proposed amendments also include a limit on individual entities claiming credits beyond 10 MW of nameplate charger capacity within ¼ of that entity's site. This overall site claiming capacity limit is sufficient to ensure a diversity of sites and applicants; there is no need for a separate FSE cap.

- **Recommendation: Eliminate the 10 FSE per site limit by striking section §95486.3(b)(2)(D)** to enable the scale necessary to meet state goals and to encourage cost reductions that come with upfront investments and larger projects. The 10 MW overall site claiming capacity limit is sufficient to meet policy objectives.

C. Eliminate or reduce the 250kW minimum capacity to enable infrastructure providers to provide the variety of solutions the market needs.

Section §95486.3 creates a minimum per-FSE power rating threshold: *"Each FSE at an MHD-FCI site must have a minimum nameplate power rating of 250 kW."* This is unnecessary and should be either removed or reduced.

The state has a policy interest in having vehicles charged as "low and slow" as possible. Lower power charging will maximize utilization of the existing distribution network, putting downward pressure on rates. For light duty vehicles, for example, home charging is encouraged at L1 and L2 levels. In the MHD sector, many trucks are not able to charge 'at home', as where they are domiciled may not have sufficient hosting capacity to serve the massive amounts of power that a fleet of trucks with very large batteries need, and small operators often do not own property or have long term leases sufficient to amortize the high costs of installing chargers. In these instances, 3rd party depots play the role of both 'home charging' (i.e. overnight dwell) and pulling into a DCFC on a highway for a mid-route refill.

There is a tradeoff between the speed of charging and the cost to serve the massive numbers of vehicles that must be electrified, and artificially biasing the market toward higher power charging through size minimums for all use cases will both increase costs and grid impacts. This is why many 3rd party depots are designed with a mix of fast opportunity chargers and slower (and cheaper) overnight or long dwell chargers - to have a mix of technologies aligned to varying use cases, designed to keep costs as low as possible while meeting a range of needs. We believe that the market can and should decide on the appropriate power levels for depot charging. Further, this is a matter of equity, as the entities that will be most impacted by the higher costs are the less-well-capitalized fleets and drivers that cannot charge 'at home' and must rely on 3rd party depots.

- **Recommendation: Eliminate the 250kW minimum by striking section §95486.3(b)(1)(E)** to allow greater flexibility on site design and cost control. If CARB sees a need for a minimum to focus on fast charging, establish 150kW as the minimum nameplate power rating.

D. *Clarify rules around access requirements for shared depots to avoid creating confusion around eligibility requirements.*

Appendix A-1 defines "shared MHD-FCI charging site" as *"…an EV fast charging site that is available to at least two MHD EV fleets under different ownership, or to the public for at least 12 hours each day…" and states that " The site must not have obstructions or obstacles precluding the fleet vehicles from entering site premises, and no registered equipment training shall be required for individuals to use the site."* It is our understanding that CARB intends to allow shared depot charging, which we strongly support. These sites generally will have security measures (e.g., security fencing and access control) to ensure safety of vehicles and cargo and to ensure access to customers from multiple authorized fleets. These sorts of standard security measures should not be considered obstacles. We recommend clarifying language to align with market needs and eliminate any future questions around eligibility.

- **Recommendation:** Clarify the definition of shared MHD-FCI charging site to remove uncertainty around security measures at shared depot sites. Suggested language: *"'Shared MHD-FCI charging site' means an EV fast charging site that is available to at least two MHD EV fleets under different ownership, or to the public for at least 12 hours each day. ~~The site must not have obstructions or~~ Access controls and security measures are allowed so long as there are no obstacles precluding the authorized fleet vehicles from entering site premises, and no registered equipment training shall be required for individuals to use the site."*

E. *Increase overall MHD-FCI program size to enable infrastructure deployment at the scale and pace required to meet California state goals.*

The MHD-FCI program is limited to 2.5% of the previous quarter deficits. At 2025 deficit levels, we estimate this would support as little as 635 MW of MHD charging capacity, increasing as utilization ramps up over time.[3] According to the CEC's AB 2127 analysis, the state will need about 2,900 MW of MHD charging by 2025 and 11.6 GW of MHD charging by 2030.[4] Additional support is needed to attract the scale of private capital required,

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[3] This calculation was derived leveraging the formulas from Appendix A-2 Proposed Regulation Order, section § 95486.3.(b)(2)(G) and section § 95486.3.(b)(5)(G) with the following assumptions: previous quarter deficits = 8,082,115 MT (based on CARB CATS model 2025 forecast); shared MHD-FCI charging site model selection; 85% uptime; and 5% utilization. Supported capacity will vary with utilization, uptime, and other assumptions.

[4] The California Energy Commission's AB 2127 report uses the HEVI-load model to forecast the number of depot and public chargers required for MHD charging under the AATE3 primary scenario. This forecast predicts the number of chargers and their respective power ratings that will be required in 2025 and 2030, as seen in Appendix-H, Table H-1. The sum of the total MHD charging capacity based on this forecast was calculated to be 2,900 MW and 11,600 MW by 2025 and 2030, respectively, by taking the sum-product of the number of chargers and their respective power rating.

particularly at this nascent stage of the market with uncertainty around commercial-scale truck deployment timelines and with both fleets and OEMs citing infrastructure as a primary limiting factor.

- **Recommendation: Increase the program cap from 2.5% to 5%.** We are at a critical launch point for both ACT and ACF and believe a higher cap – we recommend at least 5% - is warranted to begin deploying a network that will enable the market to take off. As momentum builds and the on-road electric truck population grows, CARB might consider reducing the cap.

2. Strengthen and update the overall LCFS program to better align with long-term state goals and ambitions.

LCFS has played a critical role in reducing transportation-related emissions in California since its inception. However, the market has become imbalanced in recent years, credit prices have fallen precipitously, and the program is beginning to diverge from California's longer term market transformation goals for the transportation sector.

From our standpoint as a group of companies interested in rapid and widespread electrification, the primary overarching issue with the LCFS market is that historically low credit prices are undermining investor confidence in the market. When CARB prepared its TCO analysis for ACF, it modeled credit values of $200 through 2030[5] – but credit values have plummeted to around $60[6] and the market has not reacted positively to the most recent proposed language. CARB is proposing multiple regulatory changes to begin addressing the challenges undercutting this market, including a proposal to step down program stringency in 2025 as well as the creation of Automatic Acceleration Mechanism. We generally support these provisions and appreciate the recognition that both are necessary given recent market dynamics. However, despite these proposals, we have not yet identified any analysts or brokers who see a near-term rebound in credit prices absent additional changes to the proposed regulation.

- **Recommendation: Additional program modifications are needed to support credit prices and drive innovation and investment that supports California state goals.** CARB has multiple options to support credit prices:
  - Some fuel sector experts and advocates have called for **further increases in stringency and earlier implementation of the Automatic Acceleration Mechanism** as one way to address the oversupply issues undercutting the market.
  - Many environmental advocates and community-based organizations are calling for **caps on certain crop-based biofuels** and as an important part of the solution.[7]

We recognize that this is a complicated topic with many details falling outside of our core area of expertise. Others are better positioned to weigh in on expected renewable fuel volumes, land use change, and localized

[5] Appendix G of ACF regulation, p. 21, accessed at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/appg.pdf

[6] Weekly LCFS Credit Transfer Activity Reports | California Air Resources Board. The average for February 5th-11th was $60.52.

[7] For example, see "Assembly Bill 32 Environmental Justice Advisory Committee (EJAC) DRAFT Recommendations to the California Air Resources Board (CARB) on the Low Carbon Fuel Standard Regulation Updates" (available online at 1-lcfs2024-VjMFaQNjUGABWFA0.pdf (ca.gov)) as well as comments submitted by the World Resources Institute (WRI) and others.

health impacts. It is clear that additional program changes are needed to address the supply/demand imbalance that is undercutting credit prices and we believe there is value in better aligning this policy with California's goal of a zero-emission transportation sector.

California continues to play a leadership role in reducing emissions, improving air quality, and supporting private sector innovation through strong market signals. The state has set very ambitious targets and timelines for electrifying medium- and heavy-duty vehicles, calling for a complete market transformation that will require massive investment, cross-sector collaboration, and forward-looking policy intervention. Companies like ours are stepping in to help achieve our shared goals, but infrastructure investment on the scale we need to see has not yet materialized. **With the modifications outlined above, LCFS can be the single most powerful tool California has to attract the private capital needed to build out truck charging infrastructure.** LCFS is one of the few remaining tools California has to drive investment in charging infrastructure with looming budget deficits and a crisis of rising electricity rates. We must not miss this opportunity to better align LCFS with California's goals.

We thank you for your efforts and are happy to follow up with you or CARB staff at any time.

Yours,

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